SPECIFICATION

We have noted the following errors in the original submission:

- Please amend the paragraph that begins and ends on page 2 to read as follows:

Semiconductor Optical Amplifiers (~~SAOs~~SOAs) have also been used to demonstrate wavelength conversion with a square modulation pattern (Optical Fiber Communications, Gerd Keiser, McGraw-Hill Companies, third edition, 2000, chapter 11). In this art, two SOAs are integrated in a Mach-Zender Interferometer (MZI), one SOA in each of the two arms of the MZI. The incoming optical carrier which has a wavelength λ_1, the square modulation pattern of which has to be switched to a second optical carrier which has a wavelength ~~$\lambda_1 \neq \lambda_2$~~$\lambda_2 \neq \lambda_1$, is coupled into the interferometer, is split between both arms of the MZI and propagates along them and through the SOAs. The second optical carrier, the optical intensity of which is continuous, is coupled into the MZI in the counter-propagating direction with respect to the incoming optical carrier, is split between both arms of the MZI and propagates along them and through the SOAs as well. Because of its intensity, the incoming signal modulates the refractive index of the SOAs by depleting more or less the carrier density in the amplifying medium. This modulates the phase of the second optical carrier as it propagates through both SOAs. At the output of the MZI, the two optical waves resulting from the split of the second optical wave interfere together constructively or destructively depending on the phase shift they experienced in the MZI arms. This phase shift is defined by the square modulation pattern of the incoming optical carrier. As a result, the optical intensity of the second optical carrier is modulated in intensity according to the square modulation pattern of the incoming optical carrier. The SOAs integrated in the MZI achieve thereby wavelength conversion. Although wavelength conversion is achieved, this technique suffers from sensitivity to light polarization and wavelength chirping in the amplifying medium and, therefore, limits conversion efficiency and bandwidth.

- Please amend the paragraph that begins and ends on page 5 to read as follows:

There are different methods to analyze light propagation in integrated waveguides including the Beam Propagation Method (BPM), Effective Index Method (EIM), Finite Difference Time Domain (FDTD), Finite Difference Frequency Domain (FDFD), Coupled Mode Theory (CMT), the Transfer Matrix Method (TMM), the WKB Method, the Integral Equation Method (IEM), the Mode Matching Method (MMM) and the Conformal Transformation Method (CTM) (Integrated Optoelectronics, edited by M. Dagenais, R.F. Leheny and J. Crow, Academic Press, 1995, chapters 14; Optical Integrated Circuits, H. Nishihara, M. Haruna and T. Suhara, McGraw-Hill Book Company, 1988, chapter 2; FDTD Microcavity Simulations: Design and Experimental Realization of Waveguide-Coupled Single-Mode Ring and Whispering-Gallery-Mode Disk resonators, S.C. Hagness, D. Rafizadeh, S.T. Ho, A. Taflove, Journal of Lightwave Technology, vol. 15, n° 11, 1997, pp. 2154-2165; Design and Modeling of Waveguide-Coupled Single-Mode Microring Resonators, M.K. Chin, S.T. Ho, Journal of Lightwave Technology, vol. 16, n° 8, 1998, pp. 1433-1446; J.M. Van Splunter, H. Block, N.H.G Baken, M.F. Dane, URSI Int. Symposium of Electromagnetic ~~Tehory~~Theory, Budapest, 1986, p. 321; M.C. Amann, Journal of Lightwave Technology, vol. 4, 1986, p. 689; Numerical Analysis of Vectorial Wave Propagation in Waveguides with Arbitrary Refractive Index Profiles, D. Rafizadeh, S.T. Ho, Optics Communication, vol. 141, 1997, pp. 177-188; Whispering-gallery Mode Microdisk Lasers, S.L. McCall, A.F.J. Levi, R.E Slusher, S.J. Pearton, R.A. Logan, Applied Physics Letters, vol. 60, 1992, p. 289).

- Please amend the paragraph that begins and ends on page 5 to read as follows:

These methods allow for the calculation of the relevant parameters (e.g., propagation constant, transverse electromagnetic field distribution and confinement factor) of the guided modes in the waveguide. The number of guided modes and the parameters of these modes depend on the characteristics of the coupled optical waves as well as the optical and geometrical characteristics of the waveguide. In general, several modes can be guided by the structure and these modes are identified by two indices k and l: TE_{kl} for transverse electric modes and TM_{kl} for the transverse magnetic modes. If the characteristics of the waveguide are properly tuned, only

one mode can propagate, i.e. the fundamental mode, in which case the waveguide is said to be single mode.

- Please amend the paragraph that begins on page 7 and ends on page 8 to read as follows:

The spectral distance between two contiguous resonant wavelengths of the resonator is the Free Spectral Range (FSR) of the ring. In a strongly guiding structure, the FSR is given by (FDTD Microcavity Simulations: Design and Experimental Realization of Waveguide-Coupled Single-Mode Ring and Whispering-Gallery-Mode Disk resonators, S.C. Hagness, D. Rafizadeh, S.T. Ho, A. Taflove, Journal of Lightwave Technology, vol. 15, n° 11, 1997, pp. 2154-2165):

$$\cancel{FSR_{kl,m(m+1)}} = \left[\frac{2\cdot\pi\cdot R_{eff,kl}\cdot n_{eff,kl}}{m+1} - \frac{2\cdot\pi\cdot R_{eff,kl}\cdot n_{eff,kl}}{m}\right]$$

$$FSR_{kl,m(m+1)} = \left|\frac{2\cdot\pi\cdot R_{eff,kl}\cdot n_{eff,kl}}{m+1} - \frac{2\cdot\pi\cdot R_{eff,kl}\cdot n_{eff,kl}}{m}\right|$$

Equation 2

It can be also be given by (Vertically Coupled Glass Microring Resonator Channel Dropping Filters, B.E. Little, S.T. Chu, W. Pan, D. Ripin, T. Kaneko, Y. Kokubun, E; Ippen, IEEE Photonics Technology Letters, vol. 11, n°2, 1999, pp. 215-217):

$$FSR_{kl} = \frac{\lambda_{kl}^2}{2\cdot\pi\cdot R_{eff,kl}\cdot n_{ef,kl}}\cdot\left[1+\frac{\lambda_{kl}}{n_{eff,kl}}\cdot\frac{dn_{eff,kl}}{d\lambda_{eff,kl}}\right]^{-1}$$

Equation 3

where the last term accounts for the material dispersion as well as the waveguide dispersion, the latter being not negligible in a high refractive index contrast structure.

- Please amend the paragraph that begins and ends on page 9 to read as follows:

Note 2: If, as a result of the dispersion mentioned in Note 1 above, the spectrum of the optical carriers in the system is too large, only a subset of the set of the resonant wavelengths of the resonator will be able to match a subset of the optical carriers spectrum and several K-IORFs would be required to fully map the spectrum.

- Please amend the paragraph that begins and ends on page 9 to read as follows:

In any optical substrate, an intense optical wave, i.e. with a large electric field, modulates the refractive index of the medium through the third order susceptibility $\chi^{(3)}$. Indeed, the polarization of the substrate not only depends linearly on the electric field but is defined as to (Nonlinear Fiber Optics, G.P. Agrawal, Quantum Electronics Principles and Applications, Academic Press, 1989, chapter 1):

$$\vec{P} = \varepsilon_0 \cdot \left[\chi^{(1)} \cdot \vec{E} + \chi^{(2)} : \vec{E}\vec{E} + \chi^{(3)} \vdots \vec{E}\vec{E}\vec{E}\right]$$

Equation 5

where ε_0 is the dielectric constant in vacuum, $\vec{E}$ is the electric field of the optical wave, "." , ":" and "$\vdots$" denotes the tensor product of order 1, 2 and 3 respectively and $\chi^{(i)}$ is the tensor of susceptibility of order i of the ring material. The optical wave is considered to be intense if its optical intensity exceeds a given threshold (the Kerr threshold) above which the Kerr effect is no longer negligible, i.e. above which it is possible to detect the refractive index change that is due to, and depends directly on, the optical intensity of the wave. Below this threshold, the optical wave is said to be weak. The Kerr threshold is defined by the physical properties of the substrate.

- Please amend the paragraph that begins and ends on page 11 to read as follows:

However, the tuning range of the filter is limited by the refractive index difference between the ring and its surrounding media (cladding). Beyond a given difference, the propagation of both W_{inc} and W_{filt} in the ring is no longer single mode, which is harmful for

inducing the Kerr effect in the K-IORF and for filtering out W_{filt}. The spectrum width of W_{ind} and the range of its tunable optical power also limit the tuning range.